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ENUMERATION AND ANALYSIS OF ACTINOMYCETES ISOLATED FROM A SMALL GLADE SOIL VIA MORPHOLOGY, MYCELIA, SPORES, MEDIA-DEPENDENT MORPHOLOGY, ANTIBIOTIC ACTIVITY, AND PHYLOGENETIC ANALYSES

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Actinomycetes are valuable bacteria because they produce many biological products that we can use. As a result, the isolation of actinomycetes from the environment has been a focus of research for decades. In this experiment, we exposed dilutions of soil sample taken from a small glade to different treatments and then plated them on different media with different antibiotics to determine which media and treatment combination gave the highest relative percentage of actinomycetes. We selected 15 strains from the environmental plates and characterized them via an analysis of their morphology, mycelia, spore production, 16s rDNA sequences, and antimicrobial production. Generally, the HV medium was the best for actinomycete enumeration with the HV-Nal/NHS combination giving the highest relative percentage of actinomycetes. Our analysis of the selected environmental strains revealed that all 15 strains are distinct (but not definitively identified) *Streptomyces* species. All 15 strains had characteristic actinomycete morphology. One of our key observations to arise from this study is that while the environmental isolation media chosen did not often result in a high relative percentage of actinomycetes, they did enable the isolation of a diverse subgroup of *Streptomyces* species. However, the lack of isolation of non-streptomycete actinomycetes could indicate that these media are not as effective at isolating a diverse group of actinomycetes. Our results suggest that these methods are effective for diverse actinomycete isolation, which will be beneficial for isolating novel species in the future.